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MEDERVILLE BRIDGE
(Volga River Bridge)
Iowa Bridges Recording Project
Spanning over the Volga River on county road C5X
Mederville
Clayton County
Iowa

HAER No. IA-79

BLACK & WHITE PHOTOGRAPHS

XEROGRAPHIC COPIES OF COLOR TRANSPARENCIES

WRITTEN HISTORICAL & DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Department of the Interior
P.O. Box 37127
Washington, D.C. 20013-7127

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HISTORIC AMERICAN ENGINEERING RECORD

MEDERVILLE BRIDGE
(Volga River Bridge)

HAER No. IA-79

Location:	Spanning the Volga River on a county road on the northern edge of Mederville; Cox Creek Township, Clayton County, Iowa UTM: 15.629225.4735210 USGS: Section 22, Township 92 North, Range 5 West
Date of Construction:	1918
Designers:	Marsh Engineering Company, Des Moines, Iowa
Builders:	F.E. Marsh and Company, Des Moines, Iowa
Fabricators:	none
Present Owner:	Clayton County
Present Use:	Roadway bridge
Significance:	The Mederville bridge is technologically significant as one of the earliest open-spandrel arches built in Iowa where relatively few were ever built. Meant to be an economic alternative to the steel truss for wagon bridge construction, the open-spandrel concrete arch at Mederville spans 155', and is an example of the rather uncommon use of concrete arch technology employed in spanning wide crossings.
Historians:	Richard Vidutis, James Hippen
Project information:	This document was prepared as part of the Iowa Historic Bridges Recording Project performed during the summer of 1996 by the Historic American Engineering Record (HAER). The project was sponsored by the Iowa Department of Transportation (IDOT). Preliminary research on this bridge was performed by Clayton B. Fraser of Fraserdesign, Loveland, Colorado.

EVENTS SCHEDULE

1916 - Iowa Highway Commission surveys the Mederville site for the building of a new replacement bridge (bridge no. 500).

January-March 1917 - design prepared by Iowa Highway Commission for new 287' concrete bridge with 144' arch and spandrel deck.

June 5, 1917 - bids for the construction of the bridge received by Clayton County from two companies and both rejected.

February 1918 - bids for construction again solicited by Clayton County.

March 7, 1918 - six companies submit bids and appear before county supervisors for bridge lettings, but all are bids are rejected once again.

May 1918 - design received from James B. Marsh, a Des Moines consulting engineer, for an arch bridge.

June 5, 1918 - the Marsh design accepted and contract given to F.E. Marsh and Co. of Des Moines for a low bid of $17,454.32.

INTRODUCTION

The Mederville concrete arch bridge crosses the Volga River on the north edge of the village in Cox Township. The bridge spans 155′ over the river which flows in a deep ravine. It was designed by James B. Marsh. An earlier design--a 287′ concrete structure with a spandrel deck--was prepared in 1917 by the Iowa Highway Commission but all bids were too high and it was never built. The Marsh design was accepted June 5, 1918, for a low bid of $17,454.32. Made of reinforced concrete, the open-spandrel, deck arch spans 140′ and rises 28′ from the river and is a spartan crossing tightly fitting across the gorge.

The concrete arch was actively promoted by James Marsh and N.M. Stark as an economical alternative to the steel truss and during the 1910s Iowa built hundreds of small arches, but none come close to the length of the Mederville 155′ arch. Relatively few spandrel arches were built in Iowa. The Mederville bridge is one of the earliest and remains a rare example of a rather uncommon concrete technology.

I. REGIONAL HISTORY

The history of Clayton County up to 1918 can be divided into periods: the exploratory pioneer period led to a period of permanent settlement; the end of the Civil War, renewed settlement sought economic outlets in the southern part of the county along the Volga Valley Line and the Davenport and Northern Railroads; from 1870 to 1880 internal development expanded with barely an increase in population; from 1880 to 1900 farms made greater technological strides than town based industry, and Iowa was became the most technically advanced agricultural society in the Union; and during the final period, the Mederville Bridge was built in 1918. It was a period of increased wealth, stability and permanency throughout Clayton County, including the growing economic terminus of Mederville, in Cox Township:

> "...a time of progress, of the perfecting of things old and the beginning of things new... New impulse has been given to agriculture and to home making and...there is now apparent in every move and in every construction the idea of permanency and an assured and stable future. The first expression of this was in the great stone arch bridge which spans the Turkey River and which was built, seemingly, not for time but for eternity. All over the county the frail wooden structures are being

> and stone; gravel and macadamized highways are taking the place of the old dirt roads... Public buildings are being erected with fireproof construction and the most substantial material. In fact the keynote of the history of Clayton County, since 1900, is this idea of permanency; the thought that this is home and is to be the home, not only of this but of future generations, and that it is worth while to make present sacrifice that that home may be made as beautiful, as comfortable and as complete as possible."[1]

It is within this context of improvement towards stability and refinement in Clayton County that the building of a concrete bridge at Mederville can be understood and the replacement of the covered wooden bridge which preceded it.

The village of Mederville developed in northeast Iowa, a region of many rivers--the Upper Iowa, the Yellow, the Turkey and its tributaries the Little Turkey and the Volga--winding through deep ravines and creating abundant water power for the many water mills built in the early days of settlement. The area became known as "Little Switzerland."[2] The Volga River is a tributary to and part of the basin of the Turkey River which provided the settlers with deep fertile soil on which to grow bountiful harvests of corn, oats, barley, rye, and other grains. Only thirty-three miles long, the Volga River drains a basin of 408 square miles. It rises near the western border of Fayette County and flows through an ever deepening valley. Close to Mederville the river passes through a rocky gorge just 100' wide and more than 300' deep.[3]

Cox Creek Township was named after its first settler, Philip Cox who came there in 1842 and a few others before 1850. By 1857 the town of Littleport was laid out by Dennis Quigley. But it, like so many other town, remained inconsequential until the coming of the railroad in 1874. Railroads increased the area's economy and attracted people to railroad stations, such as the terminus at

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[1]History of Clayton County, Iowa, Vol. 1, (Chicago: Robert O. Law Co., 1916), pp. 207, 239, 280.

[2]William J. Petersen, Iowa: The Rivers of Her Valleys, (Iowa City: The State Historical Society of Iowa, 1941), p. 70.

Mederville, where they could sell their produce to buyers and shippers of agricultural goods.[4]

Mederville was first known as St. Johann and was laid out in 1868 by County Surveyor J.A. Cramer for Louis Reuther and Henry Meder. It is located on the south bank of the Volga River on Section 22. The first house and a sawmill were erected in 1854 by James Beatty. In 1866 the sawmill was torn down and a new one was built by Henry Meder and Louis Reuther. The next year a stone flouring mill with three sets of buhrs was built situated by the river; both mills were powered by the Volga River. (See Fig. 2 and 3, Appendix B) The mill stood for almost six decades before being destroyed by fire on July 17, 1913.[5] (See Fig. 3, Appendix B)

At first local railroads were formed by independent companies, but by 1918 all the railroads of Clayton County were controlled by the Milwaukee system of the Chicago, Milwaukee & St. Paul Railroad Company. Farmers were eager to use the railroads because they were able to transport goods to various marketplaces. The railroads coursed their way along the rivers connecting small towns along the banks. The Volga Valley Line Railroad was pushed to completion along the river in 1871 and ran east-west through the towns of Osterdock, Elkport, Littleport, Osborne, Volga, including Mederville.[6] (See Fig. 1, Appendix B)

The introduction of the railroads produced a number of effects in the region. Towns along the railroad prospered, while those isolated from it lost business and were limited to trade areas of their own vicinities. Elkader, with no rail connections in 1879, consequently sought a link with a rail line to Mederville.[7]

The building of railroads also meant that big cities never

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[4]Ibid. History of Clayton County, 1916, p. 315.

[5]Article on the Mederville mill and covered bridge were found in a scape book at the Strawberry Point Public Library in a scrapbook of newspaper articles from 1968. The scrapbook was started in 1959 by Ethel Zwanziger and carried on by Mrs Blanche Baldridge and Mrs. Gladys Kenneally.

[6]Ibid., Hist. of Clayton County, 1916, pp. 208-210, 239-240; History of Clayton County, Iowa, (Chicago: Inter-State Publishing Co.,1882), p. 624.

[7]Ibid., History of Clayton County, 1916, pp. 208-210, 239-

developed in Clayton County. As land values rose by virtue of being close to railroads, the less well off in Iowa were forced to seek land in the west, in the Dakotas, Kansas, and Nebraska. Prosperity came to Clayton County not in the form of big populous cities, but in wealth, culture, and material comforts which could afford expensive new items such as concrete bridges like the one built at Mederville in 1918.[8] To take advantage of the railroad terminus at Mederville, a road and bridge were extended from the north (connecting with the county seat of Elkader), over the Volga at Mederville to join the southern route which forks westward to the town of Volga and eastward to Littleport. Thus Mederville became a regional hub, the coming together of a river (a power resource), an east-west railroad (access to outside markets), and north-south and east-west local roads (access to local producers).

II. HISTORY OF THE MEDERVILLE BRIDGE

An earlier bridge spanned the Volga River at Mederville, a 155' covered timber Howe truss.[9] It was a single-span structure 94' above the water line.[10]

The road crossing the Mederville bridge is part of the infrastructure of the Clayton County road system. Because of the growth of Mederville in the late 1800s--as one of Clayton County's many agricultural trading centers which developed around grist and saw mills--the crossing was dictated by the geography of the deep ravine through which the river runs. Thanks to the bridge, farmers on the north side of the Volga River gained access to the mills at Mederville and thus were able to transfer their products to the railroads--a process which enhanced agricultural trade beyond a local trading zone. The road also

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[8]Ibid.

[9]Fraserdesign, Iowa Historic Bridge Inventory: Inventory Report, (1269 Cleveland Avenue, Loveland, Colorado, 1992-94), p. CLAT15. FHWA: 119020.

[10]A local artist, Mrs. Merritt Alderson has painted a number of historic scenes from the history of Mederville from old photographs. An article on Mrs. Alderson and her paintings of the Mederville mill and covered bridge was found in a scrapbook of newspaper articles from 1968 at the Strawberry Point Public Library. The scrapbook was started in 1959 by Ethel Zwanziger and

linked the area to other roads which accessed the county seat and banks in other towns.

III. DESIGN AND TECHNOLOGY OF THE MEDERVILLE BRIDGE

The Mederville Bridge is a reinforced concrete, open-spandrel, deck arch. It is composed of two ribs, each 5' wide, with a 10' space between them. The span of the arch is 140'; the rise is 28'. The supporting columns, extending nearly across each arch rib, divide the arch into fourteen panels. The columns are essentially rectangular in cross section, with thickened outer edges (at the outer edge of the ribs) and a footing where they join the extrados of the rib. The pavement is a crowned slab supported on the heavy floor beams which connect the tops of the columns. The form marks were left on the concrete. Decoration is limited to the railing, which is a very simplified pierced balustrade.

The physical condition of the bridge is generally good. There is considerable spalling of the concrete on the underside of the arch ribs and elsewhere, caused by rusting of reinforcement bars near the surface. The bridge is now closed to vehicular traffic and is parallel by a new bridge built in the last decade which affords a spectacular view of the arch.

Conde B. McCullough, who started his engineering career in Iowa and became a nationally famous designer of concrete arch bridges in his work with the Oregon State Highway Commission, observed with regard to the economy of using this type of bridge that:

> a large portion of the cost in arch construction lies in the massive abutments and piers necessary to take the thrust of the arch ribs. For this reason the arch bridge finds special adaptation in the spanning of bold, rocky gorges,...where the rib is virtually sprung directly from the rock bluff.[11]

Regardless of the generally level nature of Iowa, there are, especially in the northeast, areas where such gorges occur. Mederville is a textbook example. The floor of the old wooden truss bridge was 40' above the bed of the Volga River, and the

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[11]C.B. McCullough, Economics of Highway Bridge Types

new bridge was to be even higher.[12] The depth of the gorge allowed the spring line of the arch to be just barely below the high water, thus causing virtually no construction of the waterway.[13] The Iowa Highway Commission surveyed the site in 1916 and prepared a design (See Fig.4, Appendix B), January to March 1917, for a new bridge. This was to be a "287' Concrete Highway Bridge, 144' Arch with Girder Approaches."[14] This proposed arch, an open spandrel deck structure, was linked with simply supported concrete girders to form approaches and a crossing at the west end over the railroad. The two concrete arch ribs, with a rise of 36', were to be reinforced with built-up steel ribs fabricated each of eight 3" x 2 ½" x 1/4" angles laced together, four at the extrados and four at the intrados. This internal steel rib was known to engineers at the time as the Melan system.[15] It was also the system used in the "Rainbow Arch Bridges" designed by James B. Marsh and widely known in Iowa at the time.

The bridge was planned to include decorative elements, such as fitting the visible deck girders above the arch with haunches to make them appear to be shallow arches. The center girder, unseen, had no such appendages. Capitals were shown on the spandrel verticals, and the railings had decorative balusters.

According to the Clayton County Supervisors' Calendar of Causes, bids for construction of the IHC designed Mederville Bridge (designated bridge no. 500) were received on June 5, 1917, for from N.M. Stark & Co., and T. Michaelson and Miller and Moine Co. All the bids were rejected by the Supervisors' Board.[16] The

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[12]Iowa Highway Commission, Bridge Record, Field Notes, August 30, 1916, Iowa Department of Transportation file no. 04136.

[13]Design for Concrete-Steel Arch Bridge, May 1918, by J.B. Marsh, Iowa Department of Transportation file no. 04702.

[14]Design for 287' Highway Bridge, 144' Arch with Girder Approaches, Iowa Highway Commission, March 1917, Iowa Department of Transportation file no. 4702.

[15]George A. Hool, Nathan C. Johnson, et al., Concrete Engineers' Handbook (New York: McGraw-Hill, 1918), pp. 694, 696, 703-704.

[16]Clayton County Supervisors' Calendar of Causes, Book G: Item 6129 (June 5, 1917), Located at the Clayton County Court

highway commission had designed a bridge both functional--crossing a railroad and river--and elegant, but too expensive.

Bids were once again solicited by the county in February 1918.[17] On March 7, 1918, a number of bridge companies (Federal Bridge Co., A.P. Scheikert, Des Moines Bridge and Iron, Co., Iowa Bridge Co., John Anderson & Son, Waterloo Construction Co., C.H. Williamson, N.M. Stark & Co., and Rodies and Bales) appeared before the Supervisors' Board for the bridge lettings. N.M. Stark & Co., and Rodies and Bale were awarded contracts on other bridges, but all bids for the Mederville Bridge were again rejected.[18] The highway commission then designed a steel truss (See Fig. 5, Appendix B) to be placed in the same location as the old bridge. They also received a design from James B. Marsh, the Des Moines consulting engineer, for an arch bridge (See Fig. 6 and 7, Appendix B) to go in the new location nearby which had been chosen for the first design.[19] The extensive approach girders which also crossed the railroad were omitted. Finally, on June 5, 1918, at 1:30 p.m., received bids were opened at the Clayton County Supervisors' Board. This time the arch design by Marsh was chosen and the contract awarded to F.E. Marsh & Co.,[20] for a low bid of $17,454.32, including engineers fee. In awarding the bridge contract, the board referred to it as the "Mederville Concrete Arch c in Group "B".[21]

Marsh's design for the open-spandrel arch, which was the one built, made several changes. These not only saved money, but had noteworthy esthetic side effects. The rise of the arch was decreased from one in four to one in five. The arch ribs were made wider, but were not connected laterally, thus eliminating a whole series of cross beams. Perhaps most interesting of all,

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[17]Ibid., Fraserdesign, p. CLAT15.

[18]Ibid., Clayton County Supervisors' Calendar of Causes, Book G: Item 6275 (March 7, 1918).

[19]Design for 160' x 16' High Truss Bridge, Iowa Highway Commission, May 1918, Iowa Department of Transportation file no. 4136.

[20]Fraserdesign, Inventory, CLAT15. J.B. Marsh, Marsh Engineering Company, and F.E. Marsh and Company, all of Des Moines, are assumed to be related enterprises.

[21]Ibid., Clayton County Supervisors' Calendar of Causes, Book

Marsh abandoned the interior angle-and-lattice rib reinforcement system, as used in his own rainbow arches, and chose a simple system of reinforcing rods. The deck was a slab supported on floor beams that rested on columns that went directly down to the arch ribs.[22] (See construction views, Fig. 8 and 9, Appendix B) The resulting design is a bridge that lacks practically all non-structural decoration and that fits the site better. It is an elegant example of successful civil engineering.[23]

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[22]Design for Concrete-Steel Arch Bridge, May 1918, by J.B. Marsh, Iowa Department of Transportation file no. 04702.

[23]At least one element introduced by Marsh seems to have been for purely esthetic reasons. Under the railing and the edge of the deck slab is a small beam extending longitudinally from column to column. It has no obvious structural purpose; in fact one section, as viewed in 1988, had broken loose and was hanging from its reinforcing rods. There was no apparent weakening of the structure. The "beams" were apparently added to visually thicken the deck portion of the bridge, and to disguise an awkward

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APPENDIX A Bridge Designs for the Mederville Bridge

Microfilm files located at the Iowa Department of Transportation, Ames, Iowa. Filed under: File 4702, File 4136, Design 117, and Design 318.

1. *Design for 287' Concrete Highway Bridge 144' Arch with Girder Approaches*. Mederville, Clayton County, Over Volga River. General Elevation and Situation Plan. Iowa Highway Commission. March 1917. Design No. 1. [9 sheets]

2. *160' x 16' High Truss Bridge*. Concrete Floor on Steel Joists. Abutment Details and General Elevation. IHC. May 1918. Design #3. [2 sheets]

3. *Design for Concrete-Steel Arch Bridge Proposed for Mederville*. May 1918. J.B. Marsh, Consulting Engineer, Des Moines, Iowa. [2 sheets]

4. *Details for Concrete-Steel Arch Bridge Proposed for Mederville*. June 1918. J.B. Marsh, Consulting Engineer, Des Moines, Iowa. [2 sheets]

APPENDIX B List of Illustrations

Fig.1 Section 22. Atlas of Clayton County, 1902, p. 16. Clayton County, Iowa. Wall Map of 1866 Combined with Atlases of 1886-1902-1914. Evansville, Indiana: Whippoorwill Publications. No date. Located at the Wilder Museum, Strawberry Point, Iowa.

Fig.2 Mederville. Atlas of Clayton County, 1886, p. 28. Clayton County, Iowa. Wall Map of 1866 Combined with Atlases of 1886-1902-1914. Evansville, Indiana: Whippoorwill Publications. No date. Located at the Wilder Museum, Strawberry Point, Iowa.

Fig.3 Photo of previous wooden Howe truss bridge and mill. From Scrapbook "History of Iowa. Clayton County and Cass Township. Past and Present." Vol. 1. Begun in 1959 by Ethel Zwanziger. Located at the Strawberry Point Public Library, Iowa.

Fig.4 Detail of previous bridge and proposed concrete bridge, sheet 1. *Design for 287' Concrete Highway Bridge 144' Arch with Girder Approaches*. Mederville, Clayton County, Over Volga River. General Elevation and Situation Plan. Iowa Highway Commission. March 1917. Design No. 1. 9 sheets.

Fig.5 Detail of proposed steel truss bridge, sheet 1. *160' x 16' High Truss Bridge*. Concrete Floor on Steel Joists. Abutment Details and General Elevation. IHC. May 1918. Design #3. 2 sheets.

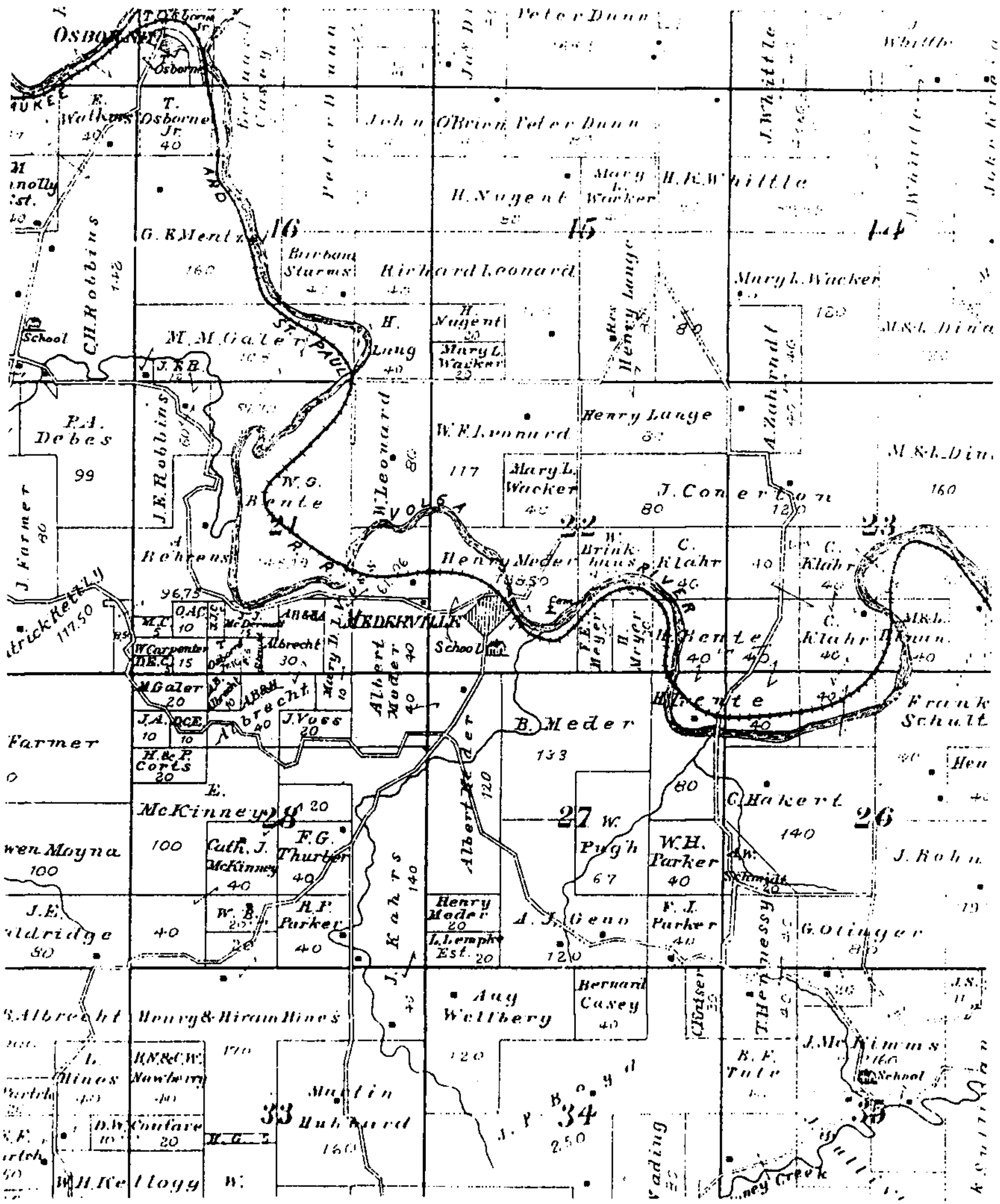
Fig.6 Profile sketch of Mederville spandrel arch bridge. James Hippen, 1996.

Fig.7 Photo of newly built Mederville spandrel arch bridge, ca. 1918. Located at Iowa Department of Transportation, Ames.

Fig.8 Photo of construction of a spandrel arch bridge identical to the Mederville Bridge. Clayton County, Highway 13 and 18 at McGregor, Iowa. Undated. Located at Iowa Department of Transportation, Ames.

Fig.9 Photo of construction of a spandrel arch bridge identical to the Mederville Bridge. Clayton County, Highway 13 and 18 at McGregor, Iowa. Undated. Located at Iowa Department of Transportation, Ames.

Fig.10 USGS Map.


Osborne
T. Osborne Jr. 40
E. Watkins 40
Peter Dunn
John O'Brien
H. Nugent
Mary L. Wacker
H. K. Whittle
J. Whittle
16
15
14
G. E. Mentz 160
C. H. Robbins
School
M. M. Galer
Richard Leonard
H. Lang 40
Mary L. Wacker 180
ST. PAUL
P. A. Debes 99
J. E. Robbins
W. F. Leonard 117
Henry Lange
A. Zahrndt
J. Conerton 80
J. Farmer 80
W. G. Bente
21
22
23
VOLGA
RIVER
A. Behrens
Henry Meder
C. Klahr
MEDERVILLE
School
Patrick Kelly 117.50
H. Bente
B. Meder 133
Frank Schultz
Farmer
J. Voss 20
Albrecht
E. McKinney
28
27
26
F. G. Thurber
Cath. J. McKinney 40
Albert Meder
W. Pugh 67
W. H. Parker 40
C. Hakert 140
J. Rohn
Owen Moyna 100
J. E. Aldridge 80
R. F. Parker 40
Henry Meder 20
F. J. Parker 40
G. Otinger
Henry & Hiram Hines
Aug Wellberg 120
Bernard Casey 40
T. Hennessy
J. McKimms 160
School
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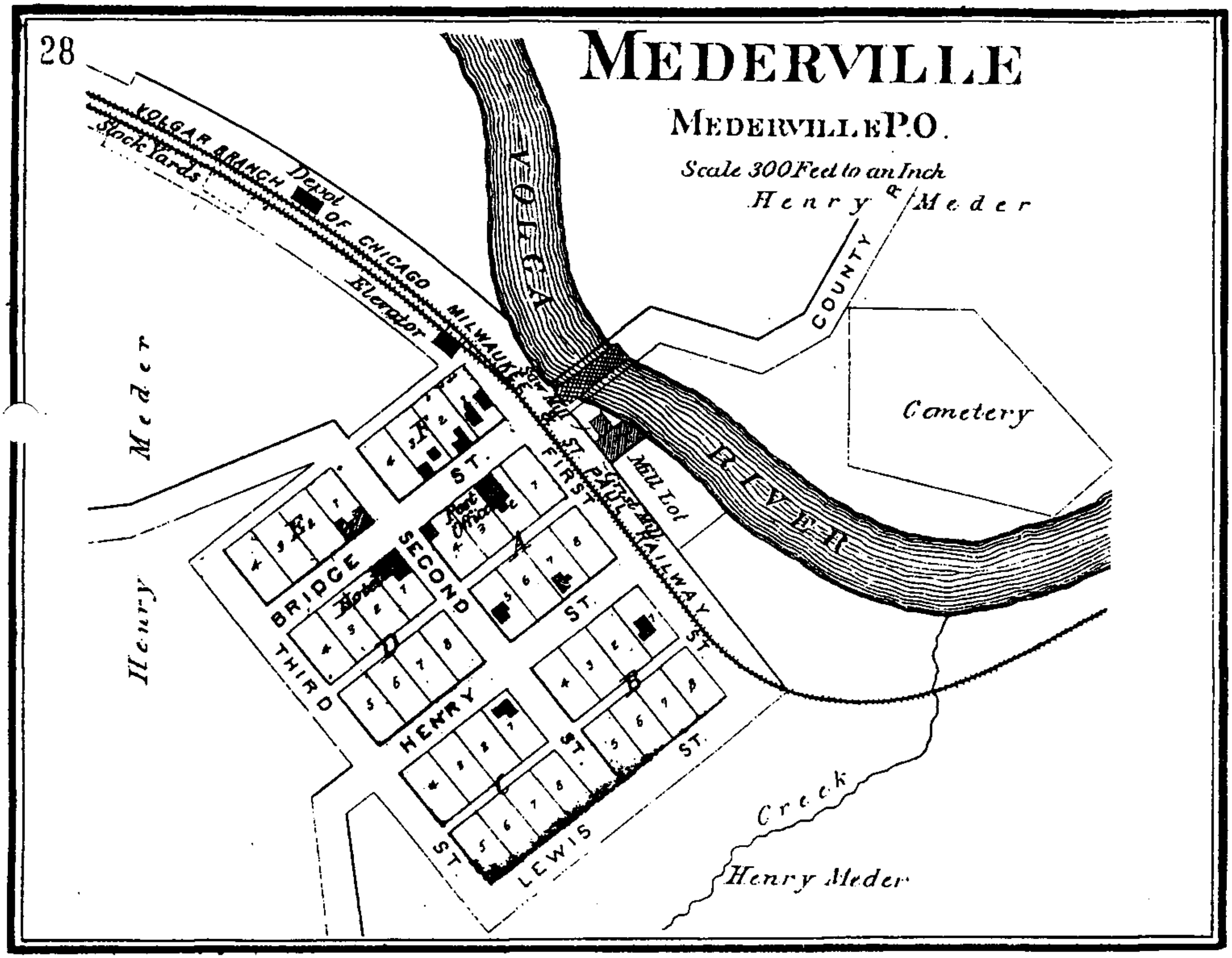
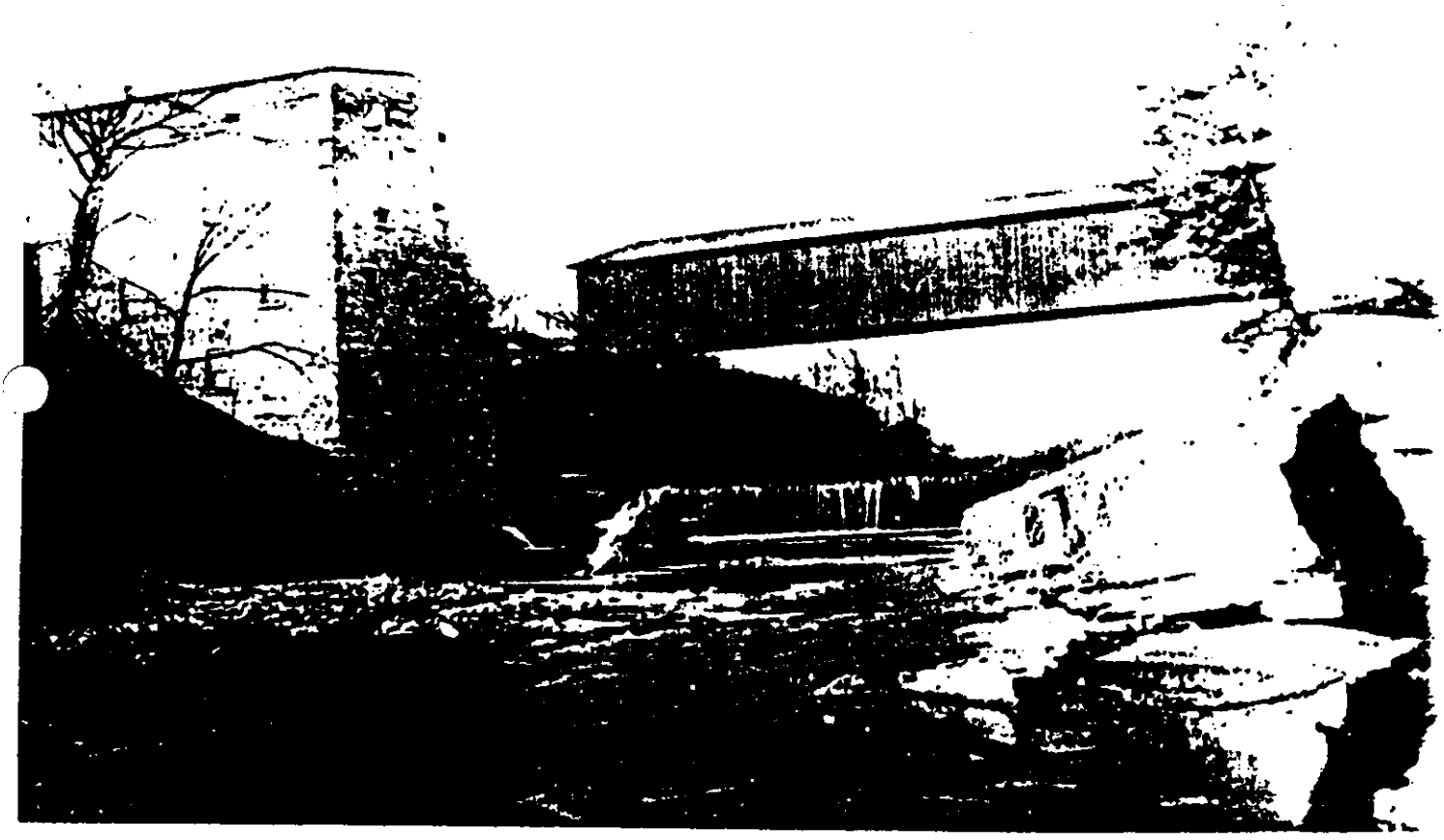
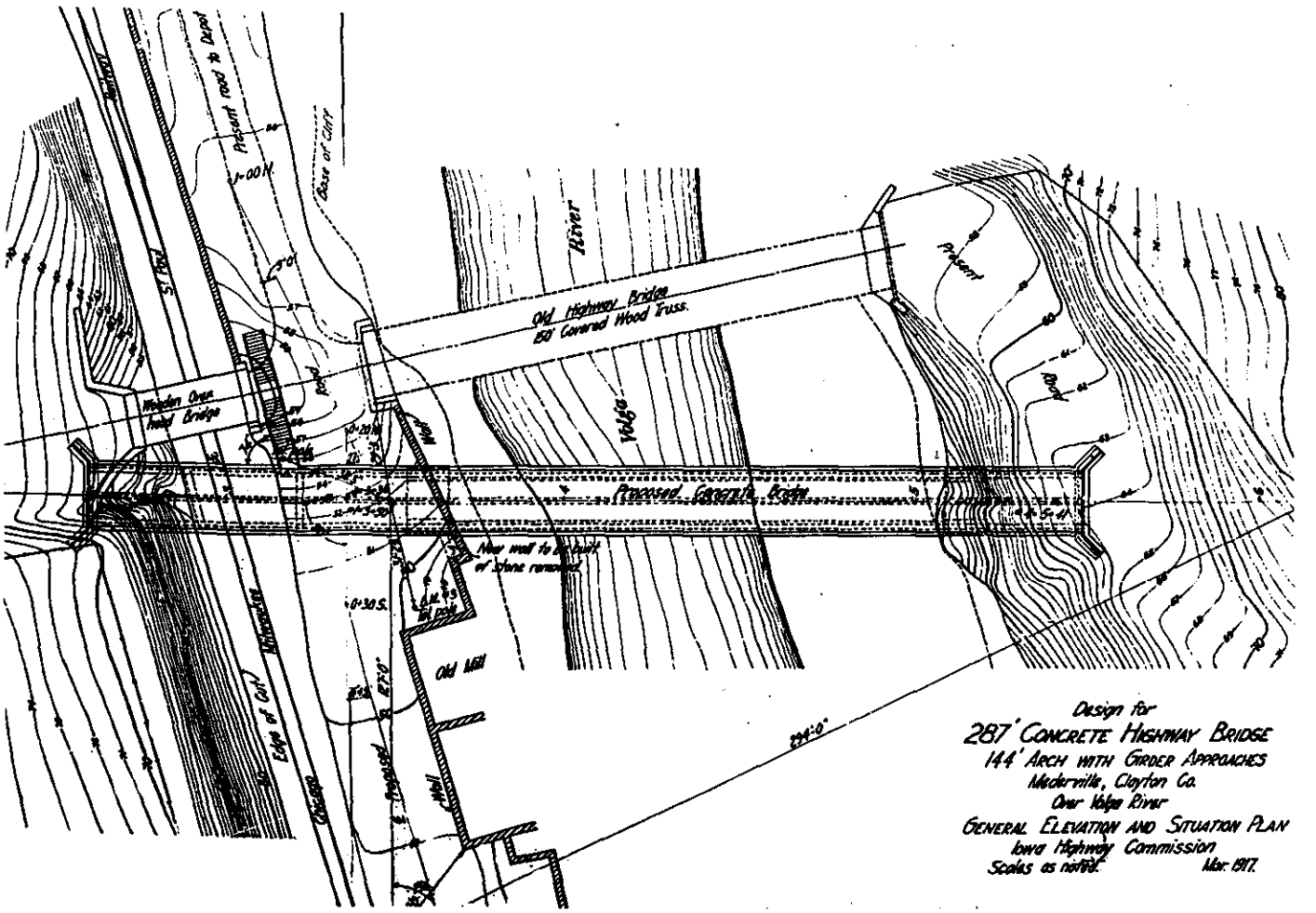
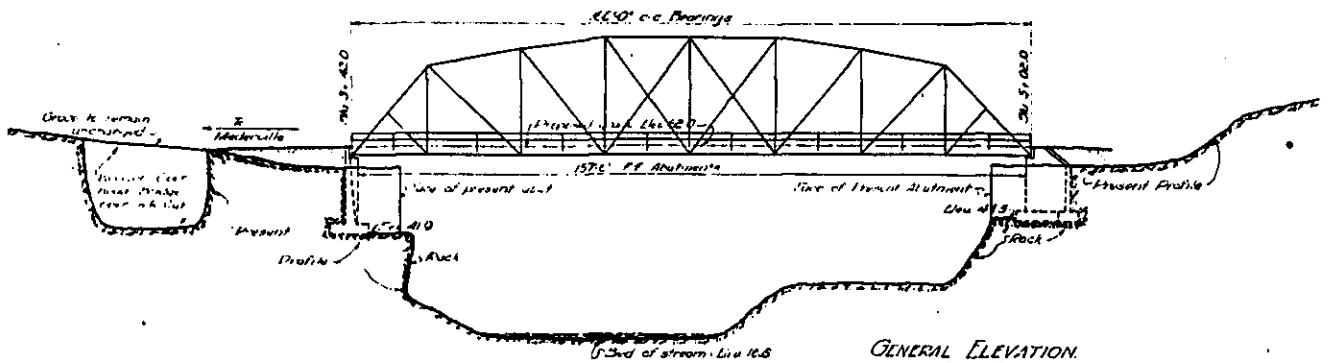
Martin Hubbard 160
J. P. Boyd 250
D. W. Coufare 20
W. H. Kellogg
B. F. Tate

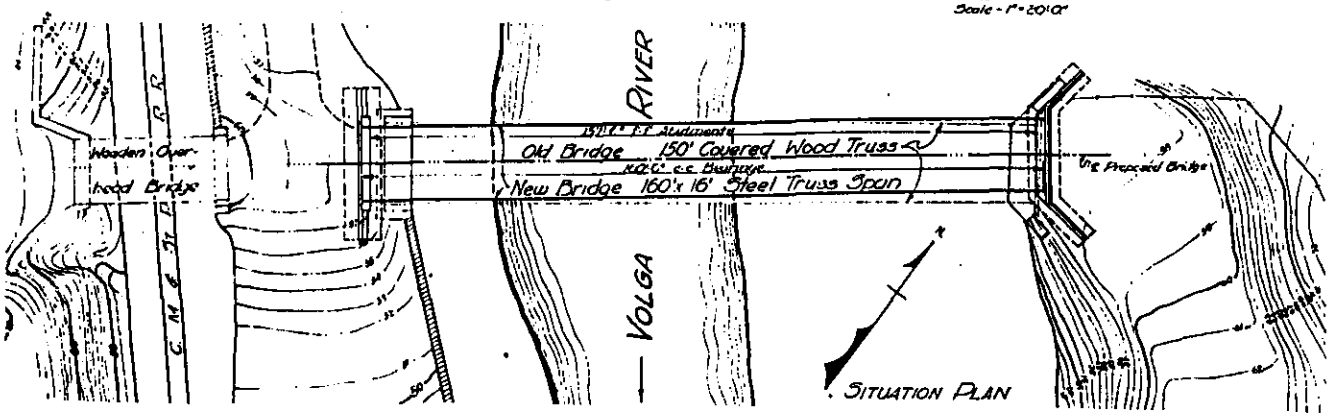

28
MEDERVILLE
MEDERVILLE P.O.
Scale 300 Feet to an Inch
Henry Meder
VOLGA RIVER
VOLGAR BRANCH OF CHICAGO MILWAUKEE & ST. PAUL RAILWAY
Depot
Stock Yards
Elevator
COUNTY
Cemetery
Mill Lot
Meder
Henry
BRIDGE ST.
SECOND ST.
FIRST ST.
THIRD ST.
HENRY ST.
LEWIS ST.
Post Office
Hotel
Creek
Henry Meder



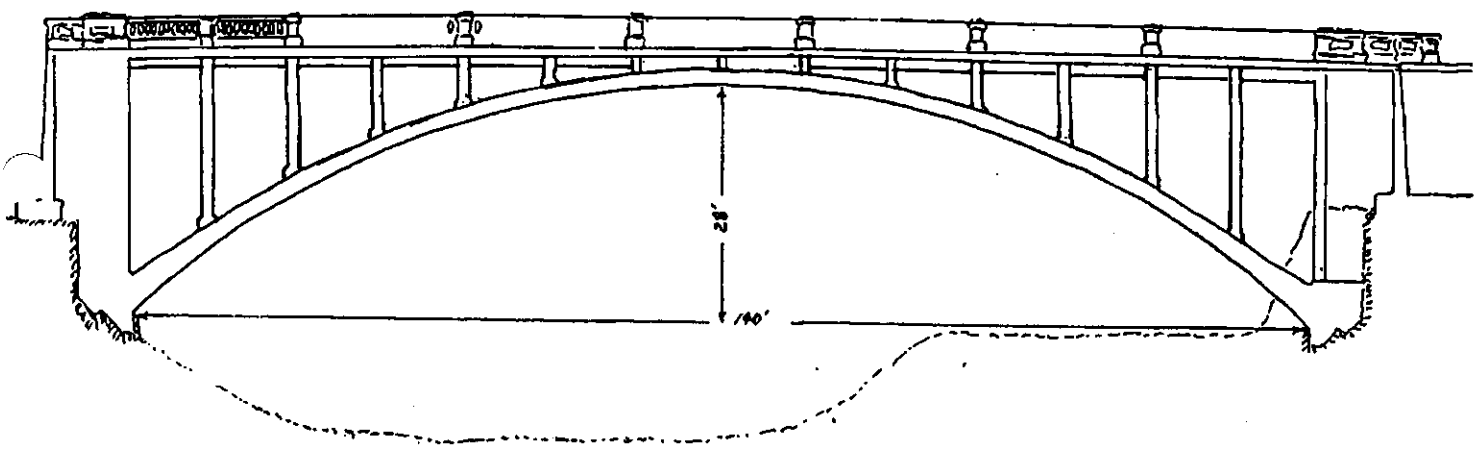


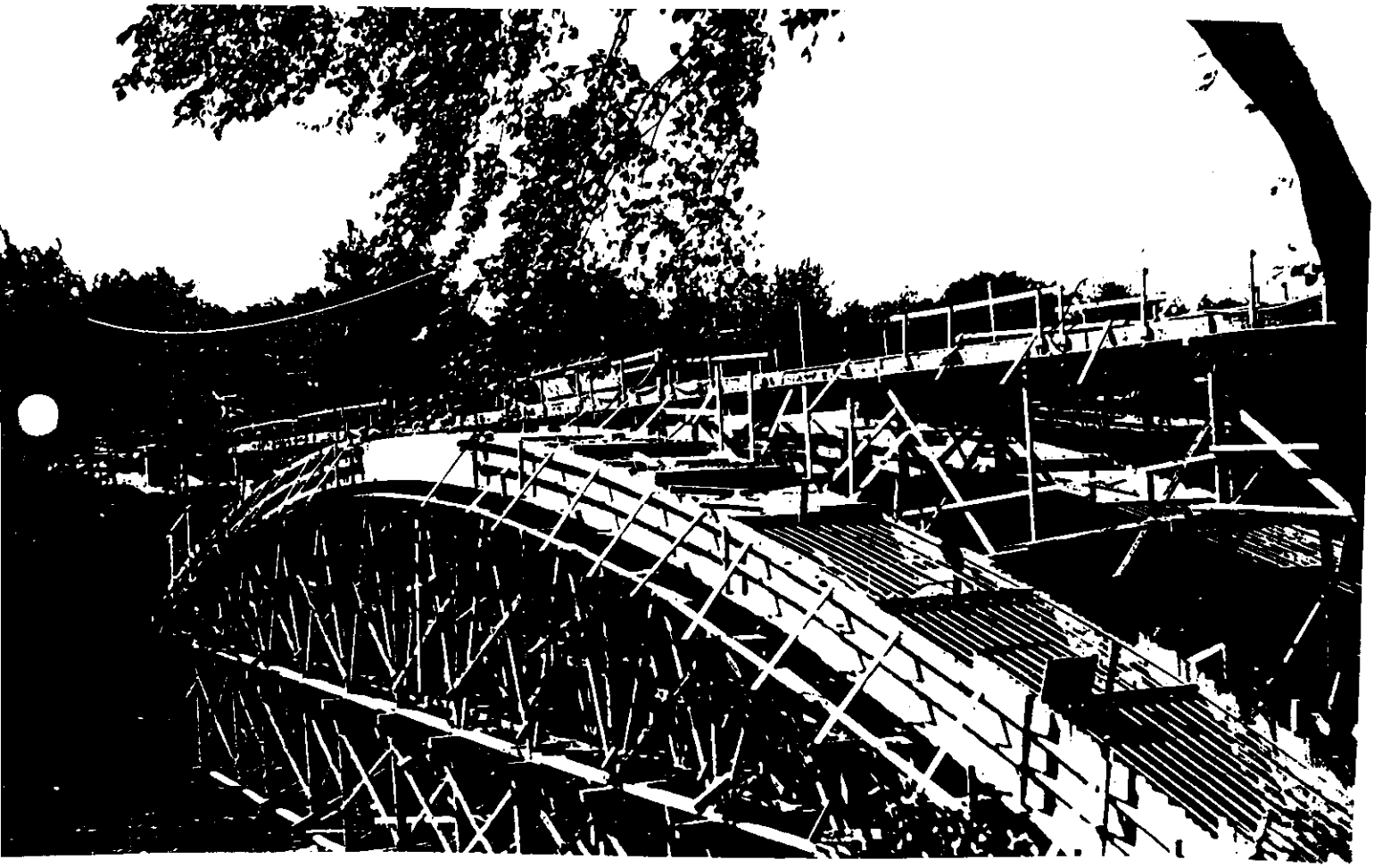
Design for
287' Concrete Highway Bridge
144' Arch with Girder Approaches
Mederville, Clayton Co.
Over Volga River
General Elevation and Situation Plan
Iowa Highway Commission
Scales as noted. Mar. 1917.

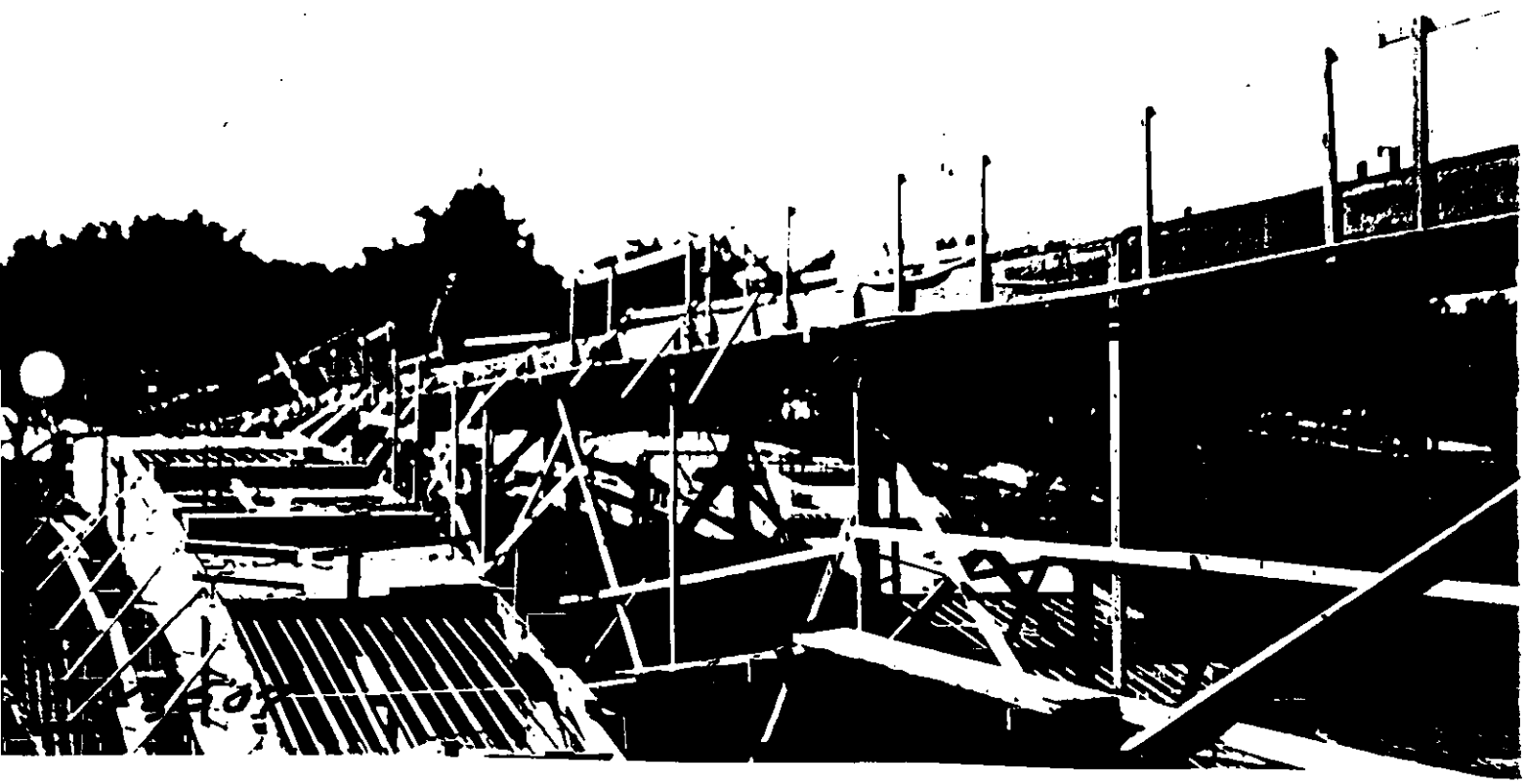

Present Profile
Rock
GENERAL ELEVATION.
Scale - 1" = 20'-0"

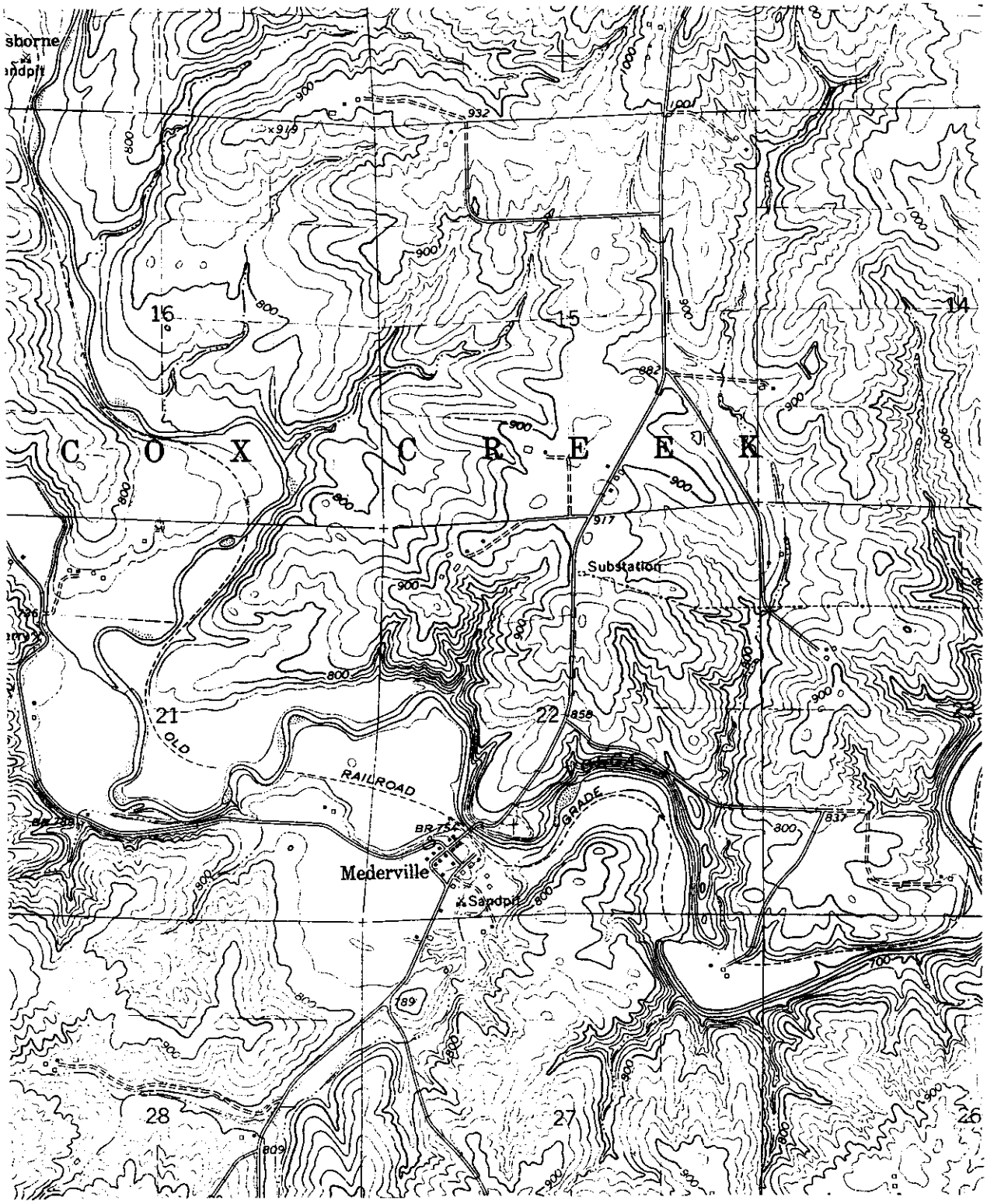

RIVER
Old Bridge 150' Covered Wood Truss
New Bridge 160'x 16' Steel Truss Span
VOLGA
SITUATION PLAN

MEDERVILLE BRIDGE








sborne
Sandpit
16
15
14
COX CREEK
Substation
21
22
OLD
RAILROAD
GRADE
BR 75
Mederville
Sandpit
28
27
26

APPENDIX C Research Statement

Research Limitations

Full design plans are available at the Iowa Department of Transportation, but photographic documentation on the Mederville Bridge is limited to one photograph at IDOT. Nor are there any historic photographs to be found at the county engineer's office in Elkader. A search for the county's Bridge Record was fruitless as the volume with bridge entries from 1918 was missing.

Future Directions for Researching the Bridge

A search of materials at the Strawberry Point Public Library uncovered a scrapbook with an article on Merritt Alderson, a local painter of scenes from the history of Mederville; one of her paintings is of the new Mederville bridge as well as of the old. The unreferenced article says Mrs. Alderson uses old photographs as a source for her paintings. Thus it would seem possible that there still may exist old photographs of the bridge in Mederville and surrounding farms. The scrapbook also mentions that two of Henry Meder's children, Mrs. Ross Dodge and Mrs. Clara Dittmer, live in Strawberry Point, and that his son, Charles Meder, lives in Elkader. These subjects should be contacted for possible historic sources on the Mederville bridge.

ADDENDUM TO
MEDERVILLE BRIDGE
(Volga River Bridge)
Iowa Historic Bridges Recording Project II
Spanning Volga River at County Road C5X
Mederville
Clayton County
Iowa

HAER No. IA-79

HAER
IOWA
22-MEDE,
1-

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
1849 C Street, NW
Washington, DC 20240

HISTORIC AMERICAN ENGINEERING RECORD HAER
IOWA
22-MEDE,
1-

MEDERVILLE BRIDGE
(Volga River Bridge)

This appendix is an addendum to a 26-page report previously transmitted to the Library of Congress.

APPENDIX: ADDITIONAL REFERENCES

Interested readers may consult the Historical Overview of Iowa Bridges, HAER No. IA-88: "This historical overview of bridges in Iowa was prepared as part of Iowa Historic Bridges Recording Project - I and II, conducted during the summers of 1995 and 1996 by the Historic American Engineering Record (HAER). The purpose of the overview was to provide a unified historical context for the bridges involved in the recording projects."